

CLAIMS

What is claimed is:

- 1 1. A method of simultaneously initializing the  
2 antiferromagnetic layers in a spin valve sensor which has a  
3 free layer, bias tabs for stabilization of said free layer,  
4 said bias tabs being comprised of a nonmagnetic layer, a  
5 ferromagnetic layer antiparallel coupled to a portion of  
6 said free layer, and a first antiferromagnetic layer  
7 adjacent to said ferromagnetic layer, said sensor  
8 additionally comprising a pinned layer exchange coupled to  
9 a second antiferromagnetic layer, comprising:  
10  
11 placing the sensor in an external magnetic field;  
12  
13 adjusting the magnitude of said magnetic field to cause the  
14 magnetization of said ferromagnetic layer in said bias tabs  
15 to be substantially perpendicular to the direction of said  
16 magnetic field;  
17

18 heating the sensor above the blocking temperature of both  
19 of the antiferromagnetic layers; and,  
20  
21 cooling the sensor below the blocking temperature of both  
22 of the antiferromagnetic layers in the presence of said  
23 magnetic field.

1 2. A method as recited in claim 1, wherein the heating  
2 and cooling are performed in a single sequence.

1 3. A method as recited in claim 2, wherein a direction of  
2 the magnetic field during the single sequence of heating  
3 and cooling is not oriented in a direction parallel to the  
4 ABS.

1 4. A method as recited in claim 2, wherein the magnetic  
2 field is varied from a start value to an optimum value  
3 during the single sequence of heating and cooling in the  
4 magnetic field.

1 5. A method as recited in claim 4, wherein the magnetic  
2 field is increased above the optimum value and then reduced

3 to the optimum value during the single sequence of heating  
4 and cooling in the magnetic field.

1 6. A method as recited in claim 4, wherein the magnetic  
2 field is increased from a value below the optimum value to  
3 the optimum value during the single sequence of heating and  
4 cooling in the magnetic field.

1 7. A method as recited in claim 1, wherein the second  
2 antiferromagnetic layer and the free layer have  
3 substantially the same width.

1 8. A method as recited in claim 1, wherein the first and  
2 second antiferromagnetic layers have substantially the same  
3 composition.

1 9. A method of simultaneously initializing the  
2 antiferromagnetic layers in a spin valve sensor which has  
3 an air bearing surface (ABS); a pinned layer having first  
4 and second ferromagnetic layers oriented antiparallel to  
5 each other; a first antiferromagnetic layer exchange  
6 coupled to the pinned layer; a free layer separated from  
7 the pinned layer by a nonmagnetic layer; and, a second

8 antiferromagnetic layer above at least one portion of the  
9 free layer and exchange coupled with the free layer for  
10 providing magnetic bias stabilization of the at least one  
11 portion of the free layer, wherein the first and second  
12 antiferromagnetic layers have substantially the same  
13 blocking temperature, comprising:

14

15 placing the sensor in an external magnetic field; AND

16

17 initializing the first and second ferromagnetic layers in a  
18 single sequence of heating and subsequent cooling in the  
19 magnetic field.

1 10. A method as recited in claim 9, wherein a direction of  
2 the magnetic field during the single sequence of heating  
3 and cooling is not oriented in a direction parallel to the  
4 ABS.

1 11. A method as recited in claim 9, wherein the second  
2 antiferromagnetic layer is a pair of tabs above opposite  
3 end regions of the free layer.

1 12. A method as recited in claim 9, wherein the second  
2 antiferromagnetic layer and the free layer have  
3 substantially the same width.

1 13. A method as recited in claim 9, wherein the magnetic  
2 field is varied from a start value to an optimum value  
3 during the single sequence of heating and cooling in the  
4 magnetic field.

1 14. A method as recited in claim 13, wherein the magnetic  
2 field is increased above the optimum value and then reduced  
3 to the optimum value during the single sequence of heating  
4 and cooling in the magnetic field.

1 15. A method as recited in claim 13, wherein the magnetic  
2 field is increased from a value below the optimum value to  
3 the optimum value during the single sequence of heating and  
4 cooling in the magnetic field.

1 16. A method as recited in claim 9, wherein the first and  
2 second antiferromagnetic layers have substantially the same  
3 composition.